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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellants	:	Alexander Fuchs et al.
Application Number	:	10/593,791
Filed	:	September 22, 2006
Title	:	FLEXIBLE PROPYLENE COPOLYMER COMPOSITIONS HAVING A HIGH TRANSPARENCY
Group Art Unit	:	1796
Examiner	:	Irina Krylova
Docket No.	:	FE 6167 (US)

Mail Stop: Appeal Brief—Patents
Honorable Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

I. REAL PARTY IN INTEREST

The real party in interest is Basell Polyolefine GmbH.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellants, their representatives, or their assignee that will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

Claims 71-83 and 85-99 are on appeal. Claims 1-70 were canceled during prosecution. Claims 84 and 100-111 are canceled in this Appeal Brief.

IV. STATUS OF AMENDMENTS

Claims 84 and 100-111 are canceled in this Appeal Brief. No other amendments are made in this Appeal Brief.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

Claims 71 and 85 are the only two independent claims on appeal. Claim 71 claims a propylene copolymer composition which comprises from 50 to 80 wt% of a propylene copolymer A) and from 20 to 50 wt% of a propylene copolymer B). The copolymer A) contains from 0.05 to 0.99 wt% of ethylene or C_{4-10} α-olefin, while copolymer B) contains from 7.01 to 20 wt% of ethylene or C_{4-10} α-olefin. The composition of the invention has a melt flow ratio MFR of 1-20 g/10 min, molecular weight distribution Mw/Mn within the range of 1.5-3.5, and a tensile E modulus within the range of 400 to 800 MPa. The composition of the invention gives its films excellent transparency. *See Specification, page 2, line 28, to page 3, line 10.* Claim 85 claims a film made from the propylene copolymer composition as described above. The film has a haze less than about 10% and a dart impact greater than about 150 grams for 1 mil thickness of film. *See Specification, page 3, line 11 to line 23.*

VI. GROUNDS OF REJECTIONS TO BE REVIEWED ON APPEAL

(1) Obviousness rejection of claims 71-100 and 104-111 over Delaite et al. (U.S. Pat. No. 6,586,528), in view of Langhauser et al. (U.S. Pat. No. 5,753,773), Job et al. (U.S. Pat. Appl. Pub. No. 2002/0037979), and Rohrmann et al. (U.S. Pat. No. 5,103,030).

(2) Obviousness rejection of claims 71, 73, 83, 85, 87, 89, and 109 over the four references of above (1) plus Kawamura et al. (U.S. Pat. Appl. Pub. No. 2002/0009563).

(3) Obviousness rejection of claims 100, 101, and 103 over the four references of above (1) plus Henderson (U.S. Pat. Appl. Pub. No. 2004/0033349).

(4) Obviousness rejection of claim 102 over the four references of above (1) plus Anderson et al. (U.S. Pat. Appl. Pub. No. 2004/0029469).

(5) Obviousness rejection of claim 104 over the four references of above (1) plus Agarwal (U.S. Pat. No. 6,699,543).

VII. ARGUMENTS

To simplify the issues on appeal, Appellants have canceled claims 84 and 100-111. Therefore, the grounds of rejections (3), (4), and (5) are not on appeal. This Appeal Brief will thus focus on the grounds of rejections (1) and (2).

First, Appellants will discuss the first ground of rejection, i.e., the obviousness rejection of claims 71-100 and 104-111 over Delaite et al. (U.S. Pat. No. 6,586,528), in view of Langhauser et al. (U.S. Pat. No. 5,753,773), Job et al. (U.S. Pat. Appl. Pub. No. 2002/0037979), and Rohrmann et al. (U.S. Pat. No. 5,103,030).

As Appellants have canceled claims 84 and 100-111, the obviousness rejection of those canceled claim on this ground are no longer relevant to this Appeal Brief.

There are two groups of claims in this ground of rejection. The first group includes claims 71-83, which relates to a propylene copolymer composition. The second group includes claims 85-99, which relates to a film made from the propylene copolymer composition.

Now Appellants address the obviousness rejection of the claims in the first group. In this group, claim 71 is the only independent claim. Claim 71 has at least the following five essential elements:

(i) The propylene copolymer composition comprises from 50 to 80 wt% a propylene copolymer A) which contains from 0.05 to 0.99 wt% of ethylene or C_{4-10} α-olefin.

(ii) The propylene copolymer composition comprises from 20 to 50 wt% of a propylene copolymer B) which contains from 7.01 to 20 wt% of ethylene or C_{4-10} α-olefin.

(iii) The propylene copolymer composition has a melt flow ratio MFR of 1-20 g/10 min.

(iv) The propylene copolymer composition has molecular weight distribution Mw/Mn within the range of 1.5-3.5.

(v) The propylene copolymer composition has a tensile E modulus within the range of 400 to 800 MPa.

Appellants respectfully note that these five claim elements are conjunctive and they all together define the propylene copolymer composition of the invention. Appellants respectfully further note that the claimed composition is a polymer (chemical) composition. The Examiner can easily find one or two isolated elements of the claimed composition from prior art. However, simply assembling those isolated elements together do not reach for a polymer composition.

The following are the findings of the Examiner from the cited references. See page 5, item 10, Office Action of March 5, 2010.

1) *Delaite et al.* discloses a propylene polymer composition comprising:

a. 55-74 wt% of propylene copolymer comprising less than or equal to 1% ethylene units; and

b. 26-45 wt% of propylene copolymer comprising 3.5 to 15 wt% of ethylene unites.

And the composition has MFI at least 1g/10 min.

2) Langhauser et al. discloses a propylene composition comprising:

a. 60-80 wt% of a copolymer of propylene with 0-5 wt% of C2-C10 alkenes; and

b. 20-40 wt% of a copolymer of propylene with 5-98 wt% of C2-C10 alkenes.

The composition has a melt flow index 0.5-50 g/min and Mw/Mn 1.83-2.01.

3) It is known from Job et al. that using metalllocene catalysts for polymerization of polyolefin produces an Mw/Mn of 2-3.5.

4) It is known from Rohrmann et al. that metallocene catalysts are sterespecific.

From the Examiner's above analysis, the Honorable Board of Appeals will see how causally and piecemeal the Examiner uses the reference teachings. For instance, Langhauser et al. teaches a **block** copolymer which has the components a) and b). In a block copolymer, components a) and b) are bonded together, and it is usually called "a-b" block copolymer. In instant claim 71, the propylene copolymer A and propylene copolymer B are physically blended together. Further, it is true that Job et al. shows a metallocene catalyst can produce a polyolefin of Mw/Mn 2-3.5 and Rohrmann et al. shows metallocene catalysts are sterespecific. But the Examiner failed to recognize the combinations of these four references may include an indefinite number of possible polymer compositions and that it is almost impossible for a person of ordinary skill in the art to recognize or come up with the instant claimed propylene copolymer composition after reading these four references. Thus, the combination of these references cannot make claim 71 and its dependent claims

72-83 obvious because, as a whole, the combined teaching of these four references does not fairly suggest the invention and cannot foresee the invention.

With regard to the second group of claims in the first ground of rejection, the only independent claim is claim 85. This group of claims relates to a film made from the propylene copolymer composition discussed above. The film has a haze less than about 10.0% and a dart impact greater than about 150 gms for a 1 mil thick film. Failing to find the claimed film properties from the combination of Delaite et al., Langhauser et al., Job et al., and Rohrmann et al., the Examiner reached a conclusory statement that the film properties must be the same because the claimed propylene copolymer composition is "identical" to those taught by the cited four references. As discussed above, the combined teachings of those four references do not point to the claimed propylene copolymer composition. More importantly, the uniqueness of the film relies on the combination of physical properties such as high modulus and high impact resistance with high transparency or low haze.

In summary, Appellants respectfully request that the Honorable Board of Appeals reverse the Examiner's obviousness rejections of claims 71-83 and 85-99 over Delaite et al. in view of Langhauser et al., Job et al., and Rohrmann et al.

Appellants now address the Examiner's second ground of rejection, i.e., the obviousness rejection of claims 71, 73, 83, 85, 87, 89, and 109 over the four references cited in the first ground of rejection plus Kawamura et al. (U.S. Pat. Paal. Pub. No.2002/0009563). Appellants respectfully note that claim 109 has been canceled in this Appeal Brief and thus the rejection no longer applies to claim 109.

Although the number of references combined by the Examiner cannot be the sole basis to traverse the rejection, in this case, the number and quality of the references cited by the Examiner indicate that the Examiner attempted to

reconstruct the invention based on hindsight from Appellants' disclosure and then find isolated elements from multiple references. The Examiner's approach, in this case, is prohibited by 35 U.S.C. § 103(a) and MPEP §2142. MPEP §2142 instructs:

"To reach a proper determination under 35 U.S.C. 103, the examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention "as a whole" would have been obvious at that time to that person. Knowledge of applicant's disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the "differences," conduct the search and evaluate the "subject matter as a whole" of the invention. The tendency to resort to "hindsight" based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art."

Appellants believe that the fifth reference, Kawamura et al., does not add any criticality to the Examiner's rejection. Thus, like the first ground of rejection, the second ground of rejection should also be withdrawn.

In view of the above arguments, Appellants respectfully request that the Honorable Board of Appeals reverse the Examiner's above obviousness rejections and allow Appellants' claims 71-83 and 85-99.

Respectfully submitted,
Alexander Fuchs et al.

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Enclosures: Appendices VIII-X

VIII. CLAIMS APPENDIX

Claims 1–70 canceled.

71. A propylene copolymer composition comprising:

A) from 50% to 80% by weight of a propylene copolymer comprising from 0.05 to 0.99% by weight of at least one alpha olefin comprising from 2 to 10 carbon atoms, with the proviso that the alpha olefin is not propylene; and

B) from 20% to 50% by weight of one propylene copolymer comprising from about 7.01 to about 20.0 % by weight of at least one alpha olefin comprising from 2 to 10 carbon atoms, with the proviso that the alpha olefin is not propylene;

said propylene copolymer composition further comprising:

(i) a MFR (230°C/2.16 kg) from about 1 to about 20 g/10 min;

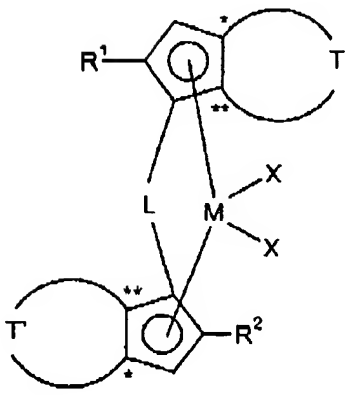
(ii) a tensile E modulus according to ISO 527-2:1993 from about 400 to about 800 MPa; and

(iii) a molar mass distribution M_w/M_n ranging from 1.5 to 3.5.

72. The propylene copolymer composition as claimed in claim 71, further comprising a melting point from 143°C to 150°C.

73. The propylene copolymer composition as claimed in claim 71, further comprising a haze according to ASTM D 1003 from 25% to 40% without adding clarifying agents.

74. The propylene copolymer composition as claimed in claim 71, produced using a catalyst system comprising at least one metallocene compound of formula (I),



(I)

wherein

M is zirconium, hafnium or titanium;

X are, identical or different and are independently of one another, hydrogen, halogen, –R, –OR, $–OSO_2CF_3$, –OCOR, –SR, $–NR_2$ or $–PR_2$, wherein R is a linear or branched C_1-C_{20}-alkyl or C_3-C_{20}-cycloalkyl, wherein the C_1-C_{20} alkyl or C_3-C_{20} cycloalkyl may be substituted by at least one C_1-C_{10}-alkyl radical, or R is a C_6-C_{20}-aryl, C_7-C_{20}-alkylaryl or C_7-C_{20}-arylalkyl, wherein R may comprise at least one heteroatom of groups 13-17 of the Periodic Table of Elements, or R may comprise at least one unsaturated bond, or two X radicals may be joined to one another;

L is a divalent bridging group selected from the group consisting of a C_1-C_{20}-alkylidene radical, a C_3-C_{20}-cycloalkylidene radical, a C_6-C_{20}-arylidene radical, a C_7-C_{20}-alkylarylidene radical and a C_7-C_{20}-arylalkylidene radical, which may comprise at least one heteroatom of groups 13-17 of the Periodic Table of Elements, or a silylidene group comprising up to 5 silicon atoms;

R^1 is a linear or branched C_1-C_{20}-alkyl or C_3-C_{20}-cycloalkyl, wherein the C_1-C_{20} alkyl or C_3-C_{20} cycloalkyl may be substituted by at least one C_1-C_{10}-alkyl radical, or R is a C_6-C_{20}-aryl, C_7-C_{20}-alkylaryl or C_7-C_{20}-arylalkyl, wherein R may comprise at least one heteroatom of

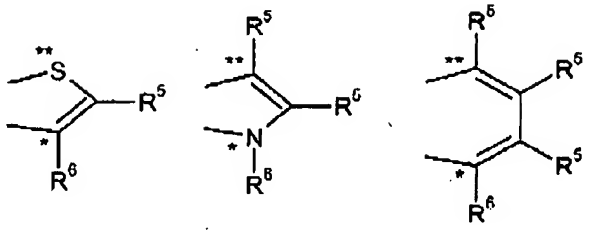
groups 13-17 of the Periodic Table of Elements, and R may comprise at least one unsaturated bond;

R^2 is $-C(R^3)_2R^4$;

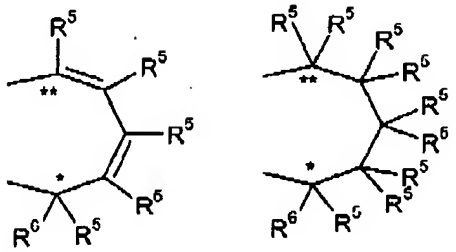
R^3 are, identical or different and are each independently of one another, a linear or branched C_1-C_{20}-alkyl or C_3-C_{20}-cycloalkyl, wherein the C_1-C_{20} alkyl or C_3-C_{20} cycloalkyl may be substituted by at least one C_1-C_{10}-alkyl radical, or R is a C_6-C_{20}-aryl, C_7-C_{20}-alkylaryl or C_7-C_{20}-arylalkyl, wherein R may comprise at least one heteroatom of groups 13-17 of the Periodic Table of Elements, and R may comprise at least one unsaturated bond, or two R^3 radicals may be joined to form a saturated or unsaturated C_3-C_{20}-ring;

R^4 is hydrogen or a linear or branched C_1-C_{20}-alkyl or C_3-C_{20}-cycloalkyl, wherein the C_1-C_{20} alkyl or C_3-C_{20} cycloalkyl may be substituted by at least one C_1-C_{10}-alkyl radical, or R is a C_6-C_{20}-aryl, C_7-C_{20}-alkylaryl or C_7-C_{20}-arylalkyl, wherein R may comprise at least one heteroatom of groups 13-17 of the Periodic Table of Elements, and R may comprise at least one unsaturated bond;

T and T' are divalent groups of formula (II), (III), (IV), (V) or (VI),



(II) (III) (IV)



(V) (VI)

wherein

the atoms denoted by the symbols * and ** are joined to the atoms of the metallocene compound of formula (I) which are denoted by the same symbol, and

R^5 are, identical or different and are each independently of one another, hydrogen, halogen or a linear or branched C_1-C_{20}-alkyl or C_3-C_{20}-cycloalkyl, wherein the C_1-C_{20} alkyl or C_3-C_{20} cycloalkyl may be substituted by at least one C_1-C_{10}-alkyl radical, or R is a C_6-C_{20}-aryl, C_7-C_{20}-alkylaryl or C_7-C_{20}-arylalkyl, wherein R may comprise at least one heteroatom of groups 13-17 of the Periodic Table of Elements, or R may comprise at least one unsaturated bond;

R^6 are, identical or different and are each independently of one another, halogen or a linear or branched C_1-C_{20}-alkyl or C_3-C_{20}-cycloalkyl, wherein the C_1-C_{20} alkyl or C_3-C_{20} cycloalkyl may be substituted by at least one C_1-C_{10}-alkyl radical, or R is a C_6-C_{20}-aryl,

C_7-C_{20}-alkylaryl or C_7-C_{20}-arylalkyl, wherein R may comprise at least one heteroatom of groups 13-17 of the Periodic Table of Elements, or R may comprise at least one unsaturated bond.

75. The propylene copolymer composition as claimed in claim 74, wherein L is $-SiMe_2-$ or $-SiPh_2-$.

76. The propylene copolymer composition as claimed in claim 74, wherein R^1 is preferably a linear or branched C_1-C_{10}-alkyl group which is unbranched in the α position.

77. The propylene copolymer composition as claimed in claim 76, wherein R^1 is a linear C_1-C_4-alkyl group.

78. The propylene copolymer composition as claimed in claim 77, wherein R^1 is methyl, ethyl, n-propyl or n-butyl.

79. The propylene copolymer composition as claimed in claim 71, wherein the alpha olefin is exclusively ethylene.

80. The propylene copolymer composition as claimed in claim 71, wherein the alpha olefin of B) is from about 7.01% to about 9.99% by weight.

81. The propylene copolymer composition as claimed in claim 71, wherein the alpha olefin of B) is from about 8.0% to about 9.6% by weight.

82. The propylene polymer composition as claimed in claim 71, wherein the MFR is from 6 to 12 g/10min.

83. The propylene polymer composition as claimed in claim 71, wherein the tensile E modulus is from 550 to 750 MPa.

84. (Canceled).

85. A film comprising a propylene copolymer composition comprising:

A) from 50% to 80% by weight of a propylene copolymer comprising from 0.05 to 0.99% by weight of at least one alpha olefin comprising from 2 to 10 carbon atoms, with the proviso that the alpha olefin is not propylene; and

B) from 20% to 50% by weight of one propylene copolymer comprising from about 7.01 to about 20.0 % by weight of at least one alpha olefin comprising from 2 to 10 carbon atoms, with the proviso that the alpha olefin is not propylene;

wherein A) and B) are obtained using a catalyst system comprising at least one metallocene compound, and the propylene copolymer composition further comprises a MFR from about 1 to about 20, a tensile E modulus from about 400 to about 800 MPa, and a molar mass distribution M_w/M_n ranging from 1.5 to 3.5; and

the film has a haze less than about 10.0% and a dart impact greater than about 150 gms for a 1 mil thick film.

86. The film according to claim 85 further comprising a melting point of between about 143°C to about 150°C.

87. The film according to claim 85, wherein the film has a haze less than about 5% for a 1 mil thick film.

88. The film according to claim 85, wherein the film has a dart impact greater than about 200 gm for a 1 mil thick film.

89. The film according to claim 85, wherein the tensile E modulus of the propylene copolymer composition is from about 550 to about 750 MPa.

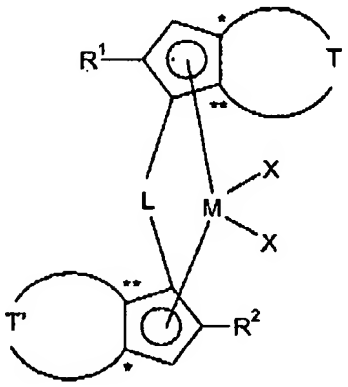
90. The film according to claim 85, wherein the film further comprises a WVTR greater than about 11.6 gm/m2-day.

91. The film according to claim 85, wherein the film further comprises a OTR greater than about 3875 gm/m2-day.

92. The film according to claim 85, wherein the film further comprises a CO2TR greater than about 19,375 cc/m2-day.

93. The film according to claim 85, wherein the film further comprises a hexane extractables not greater than about 2.6%, and xylene solubles less than about 30%.

94. The film according to claim 85, wherein the metallocene compound is of formula (I):



(I)

wherein

M is zirconium, hafnium or titanium;

X are, identical or different and are independently of one another, hydrogen, halogen, –R, –OR, $–OSO_2CF_3$, –OCOR, –SR, $–NR_2$ or $–PR_2$, wherein R is a linear or branched C_1-C_{20}-alkyl or C_3-C_{20}-

cycloalkyl, wherein the C_1-C_{20} alkyl or C_3-C_{20} cycloalkyl may be substituted by at least one C_1-C_{10}-alkyl radical, or R is a C_6-C_{20}-aryl, C_7-C_{20}-alkylaryl or C_7-C_{20}-arylalkyl, wherein R may comprise at least one heteroatom of groups 13-17 of the Periodic Table of Elements, or R may comprise at least one unsaturated bond, or two X radicals may be joined to one another;

L is a divalent bridging group selected from the group consisting of a C_1-C_{20}-alkylidene radical, a C_3-C_{20}-cycloalkylidene radical, a C_6-C_{20}-arylidene radical, a C_7-C_{20}-alkylarylidene radical and a C_7-C_{20}-arylalkylidene radical, which may comprise at least one heteroatom of groups 13-17 of the Periodic Table of Elements, or a silylidene group comprising up to 5 silicon atoms;

R^1 is a linear or branched C_1-C_{20}-alkyl or C_3-C_{20}-cycloalkyl, wherein the C_1-C_{20} alkyl or C_3-C_{20} cycloalkyl may be substituted by at least one C_1-C_{10}-alkyl radical, or R is a C_6-C_{20}-aryl, C_7-C_{20}-alkylaryl or C_7-C_{20}-arylalkyl, wherein R may comprise at least one heteroatom of groups 13-17 of the Periodic Table of Elements, and R may comprise at least one unsaturated bond;

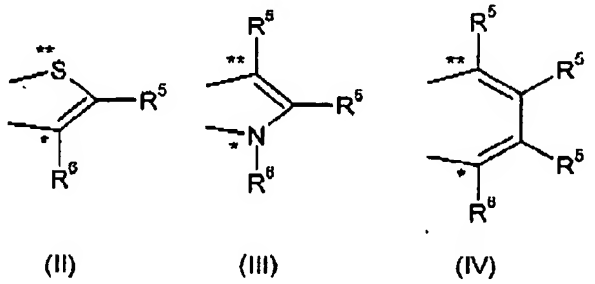
R^2 Is $-C(R^3)_2R^4$;

R^3 are, identical or different and are each independently of one another, a linear or branched C_1-C_{20}-alkyl or C_3-C_{20}-cycloalkyl, wherein the C_1-C_{20} alkyl or C_3-C_{20} cycloalkyl may be substituted by at least one C_1-C_{10}-alkyl radical, or R is a C_6-C_{20}-aryl, C_7-C_{20}-alkylaryl or C_7-C_{20}-arylalkyl, wherein R may comprise at least one heteroatom of groups 13-17 of the Periodic Table of Elements, and R may comprise at least one unsaturated bond, or two R^3 radicals may be joined to form a saturated or unsaturated C_3-C_{20}-ring;

R^4 is hydrogen or a linear or branched C_1-C_{20}-alkyl or C_3-C_{20}-cycloalkyl, wherein the C_1-C_{20} alkyl or C_3-C_{20} cycloalkyl may be substituted by at least one C_1-C_{10}-alkyl radical, or R is a C_6-C_{20}-

aryl, C_7-C_{20}-alkylaryl or C_7-C_{20}-arylalkyl, wherein R may comprise at least one heteroatom of groups 13-17 of the Periodic Table of Elements, and R may comprise at least one unsaturated bond;

T and T' are divalent groups of formula (II), (III), (IV), (V) or (VI),



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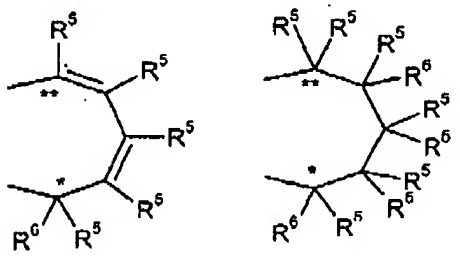

(V) (VI)

wherein

the atoms denoted by the symbols * and ** are joined to the atoms of the metallocene compound of formula (I) which are denoted by the same symbol, and

R^5 are, identical or different and are each independently of one another, hydrogen, halogen or a linear or branched C_1-C_{20}-alkyl or C_3-C_{20}-cycloalkyl, wherein the C_1-C_{20} alkyl or C_3-C_{20} cycloalkyl may be substituted by at least one C_1-C_{10}-alkyl radical, or R is a C_6-C_{20}-aryl, C_7-C_{20}-alkylaryl or C_7-C_{20}-arylalkyl, wherein R may comprise at least one heteroatom of groups 13-17 of the Periodic Table of Elements, or R may comprise at least one unsaturated bond;

R^6 are, identical or different and are each independently of one another, halogen or a linear or branched C_1-C_{20}-alkyl or C_3-C_{20}-cycloalkyl, wherein the C_1-C_{20} alkyl or C_3-C_{20} cycloalkyl may be substituted by at least one C_1-C_{10}-alkyl radical, or R is a C_6-C_{20}-aryl, C_7-C_{20}-alkylaryl or C_7-C_{20}-arylalkyl, wherein R may comprise at least one heteroatom of groups 13-17 of the Periodic Table of Elements, or R may comprise at least one unsaturated bond.

95. The propylene copolymer composition as claimed in claim 94, wherein L is $-SiMe_2-$ or $-SiPh_2-$.

96. The propylene copolymer composition as claimed in claim 94, wherein R^1 is preferably a linear or branched C_1-C_{10}-alkyl group which is unbranched in the α position.

97. The propylene copolymer composition as claimed in claim 96, wherein R^1 is a linear C_1-C_4-alkyl group.

98. The propylene copolymer composition as claimed in claim 97, wherein R^1 is methyl, ethyl, n-propyl or n-butyl.

99. The film according to claim 85, wherein the MFR is from about 6 to about 12.

Claims 100-111 canceled.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

None.